

# Improved Quality and Performance in Extended Range Measurements with the New 3300 XL 11 mm Transducer

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While millions of proximity probes with 5 mm and 8 mm tip diameters are in use around the world, some applications require more than the 2.0 mm (80 mils) of linear range supplied by these smaller tip diameter transducers. The most common applications requiring extended measurement ranges of up to 4.0 mm (160 mils) include axial position (thrust) measurements on large turbine generators, differential expansion measurements on steam turbines, rod drop/rod position measurements on reciprocating compressors, speed measurements on gears or toothed wheels, and radial vibration measurements in hydroelectric turbine generator applications.

To provide these critical extended range measurements with our most recent advancements in accuracy and robustness, we are pleased to announce the 3300 XL 11 mm Proximity Transducer System, consisting of an 11 mm Probe, Extension Cable, and Proximito<sup>®</sup> Sensor. It has a standard linear range of 4 mm (160 mils) and a 3.94 V/mm (100 mV/mil) output. The

3300 XL 11 mm Proximito<sup>®</sup> Sensor is available in a narrow aluminum case mounted either on a 35 mm DIN rail or directly to a panel using screws, identical to the design used in

our 3300 XL 5 mm or 8 mm Proximito<sup>®</sup> packaging. Standard probe configurations include armored and unarmored probe cables and stainless steel cases with M14 x 1.5, M16 x 1.5, 1/2-20, and 5/8-18 thread options for standard mount probes. Reverse-mount probes are also available with 3/8-24 and M10 x 1 threads.

## Increased Accuracy and Temperature Stability

Bently Nevada has continued to research the best techniques for maintaining a long linear range and consistent data, while allowing transducer system components (cables, probes, and Proximito sensors) to reside in different temperatures, as is common in many machinery installations.

Improvements in technology and in our knowledge of eddy current measurements now allow us to better compensate for temperature variations for different components of the transducer system. This enables us to produce a more temperature-stable and accurate transducer system while simultaneously incorporating many new features that make this transducer system superior to our previous extended range systems. The 3300 XL 11 mm Transducer System incorporates this technology to help eliminate errors due to interchangeability and temperature variations.

With our 3300 XL Series system, we improved the accuracy of the transducer system in four ways. First, we made the system much more accurate than our previous systems. Second, each 3300 XL component has a much tighter acceptance window, ensuring that every system that we ship will fall within the tighter accuracy specification, even if the transducer system components are randomly interchanged. Third, we widened the temperature range over which the system accuracy applies. For example, a typical accuracy specification for older transducer systems may



only be valid at +22 °C (+72 °F), with a tolerance of  $\pm 4$  °C ( $\pm 8$  °F). In contrast, the new 3300 XL 11 mm Transducer System will meet its operating temperature accuracy specification throughout the temperature range of 0 °C to +45 °C (+32 °F to +113 °F). Finally, we also included a less stringent accuracy specification where components may exceed the 0 °C to +45 °C (+32 °F to +113 °F) temperature range. While accuracy in this extended temperature region is slightly less than in the 0 to 45 degree range, it is adequate for the vast majority of applications encountering temperature extremes. All of these improvements translate into a more consistent, accurate system that is easier to test and is less affected by temperature variations.

We were also able to give this transducer system an **extended linear range**. This allows the transducer to be used outside its standard range of 4.00 mm (160 mils) for applications (such as axial position measurements) requiring up to 4.25 mm (170 mils), with only a very slight derating of the accuracy at these extended distances. The extended linear range is intended for axial position measurements. However, the extended linear range is not compatible with installations using intrinsic safety barriers *external* to the monitoring system.

## Easier Installation

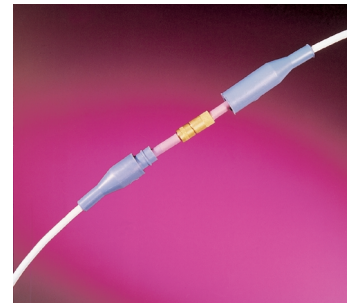
3300 XL Proximitor® Sensors are available in two different mounting configurations. If ordered with the panel mount option, the Proximitor® Sensor comes with a mounting pad that has the same hole pattern as our previous 3300 Series and 7200 Series Proximitor® Sensors. With this version, the Proximitor® Sensor is typically installed using four 6-32 UNC threaded screws. A DIN-mount version is also available for the 3300 XL Proximitor® Sensor, allowing you to snap the Proximitor® Sensor into place on a 35 mm DIN rail. Because the 3300 XL Proximitor® Sensor is thinner than all of our panel-mount Proximitor® Sensors, the DIN rail version saves room in the housing, allowing you to install more Proximitor® Sensors side-by-side in the same housing.

ClickLoc™ connectors are also included on the 3300 XL 11 mm Transducer System. These gold-plated brass connectors are highly robust and are much easier to use than our previous stainless steel connectors. They should only be tightened finger-tight, which means that they will be secure after 2 to 5 “clicks.” A spring-loaded locking mechanism prevents the connectors from becoming loose, even when subject to high vibration. The gold-plated brass construction and locking mechanism virtually eliminates the possibility of intermittent connections caused by a loosening connection.

The 3300 XL 11 mm Transducer System has also achieved compliance with European CE standards with

fewer restrictions than previous transducer systems. Some of the most stringent tests for the CE mark involve the susceptibility to radiated Radio Frequency Interference (RFI) and conducted RFI. Most transducer systems require that each element of the transducer system (probe, extension cable, and Proximitor® Sensor) and the corresponding field wiring are installed in hardline or shielded conduit or in an Electromagnetic Interference (EMI)-shielded enclosure with a cover in order to meet these requirements. 3300 XL Transducer Systems are designed such that RFI has a very small effect on the circuit – so small that you no longer need to shield any part of the transducer system or field wiring to comply with the CE mark. This improved RFI immunity also prevents radio signals (such as those generated by hand-held two-way radios or cellular phones) from generating false vibration signals when used near the Proximitor® Sensor. You should still use some type of instrumentation housing and conduit for most installations to protect the transducer system from the environment.

3300 XL 11 mm probes and extension cables can also be ordered with fluorosilicone connector protectors already installed. This helps to reduce installation time while providing the best possible protection for the connectors against moisture or other contaminants.



Each 3300 XL 11 mm probe also comes with a locknut that includes small holes (1.59 mm [0.0625 inch] dia.) for safety wire. Safety wire is recommended to secure the locknut in place after the probe gap is properly set.

## Increased Robustness

We have included many features that make this transducer system more robust than our older extended range systems, including:

- Triaxial extension cables and probe cables, which eliminate the chance of ground loops caused by exposing the outer braid of the cable by accidentally nicking or cutting the cable's outer jacket.
- Polyphenylene sulfide (PPS) probe tip material, providing superior water resistance and chemical resistance compared to older fiberglass-tipped probes.
- The patented TipLoc™ injection molding method for the probe tip, providing increased resistance to torque applied to the PPS probe tip.

- Optional FluidLoc® cable for both the probe lead and extension cable, which prevents oil and water from migrating out of the machine through the outer cable braid or outer conductor.
- A Viton® o-ring that seals pressure between the PPS probe tip and the back of the probe case.

### Hazardous Area Installations

The 3300 XL 11 mm Transducer System has multiple approvals through European and North American agencies for intrinsically safe Zone 0, Zone 1, or Division 1 installations, and for use in Zone 2 EEx nA and Division 2 or Zone 2 ExnA applications. It has also been approved for use with galvanic isolators. The hazardous area approvals include certification to the European ATEX directive, governing all new installations of products into hazardous areas in Europe starting in 2003.

### Compatibility

Components of the 3300 XL 11 mm Transducer System are **not compatible** with components of any other transducer system. Thus, probe, extension cable, and Proximitor sensor must be from the 3300 XL 11 mm Transducer System. To assist in ensuring only compatible components are used, the 3300 XL 11 mm System has all of its components color-coded purple.

The transducer system is fully compatible with 3500 monitors that have configuration software versions 2.82 or later. Some 3300 Monitoring Systems will require a modification for compatibility. Contact your local Bently Nevada sales or service professional to verify your specific monitoring system compatibility if you are using a 3300 Monitoring System. [↗](#)